Triangulation of Routine Viral Load Monitoring data in Pediatric Clients at a Regional Hospital, KwaZulu-Natal, South Africa

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Background

- According to UNAIDS, 90% of people on ART should be virologically suppressed.

- High virologic failure rates of up to 40% have been reported in SA pediatric ART clients.

- Triangulation of Tier.net, National Health Laboratory Service (NHLS) and clinical chart viral load (VL) data may optimize Tier.net as the 'gold standard' health information system for pediatric client management and program reporting.

- We present preliminary findings from a VL triangulation exercise conducted in high risk pediatric clients.

VL: Routine Health Information – benefits of triangulation
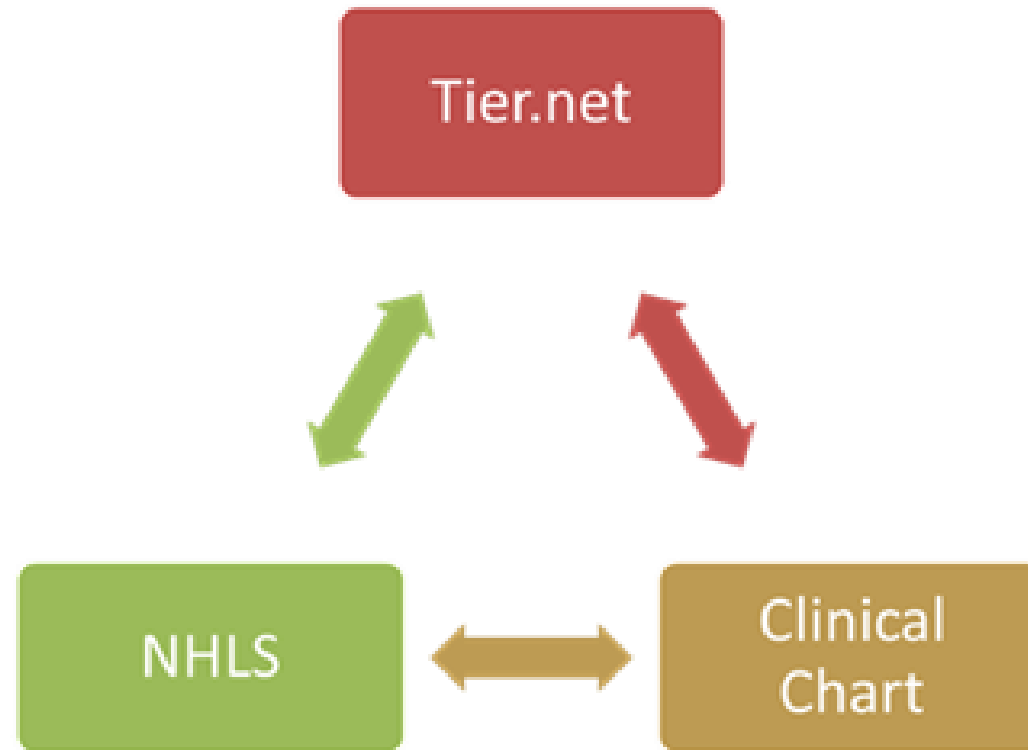
Methods

- An audit of pediatric (<15 years) HIV clinical charts was conducted for a 12 month period. We then triangulated monthly VL records from NHLS and Tier.net for the same period.

- We ascertained: 'total remaining on ART' (TROA); proportion of TROA with VL completed as per SA Guidelines in past 12 months (VLD); and proportion of VLD with viral load suppressed (VLS).

- A correlation analysis and Bland-Altman analysis was conducted to monitor differences between the three data sources.

- The baseline assessment was presented to clinical teams and quality improvement plans were developed to improve capturing into Tier.net and to identify missed opportunities.

Key Results

Table 1: VL analysis using 12 month Pediatric cohort as per three data sources

Indicator	Clinical Charts October 2016	NHLS October 2016	Tier.net		
			October 2016	May 2017	August 2017
Indicator	Total charts reviewed =1855	Estimated from CDW dashboard facility report	October 2016	May 2017	August 2017
TROA(N)	951	1002	867	842	750
VLD (%)	84% (798/951)	90%	75%	82%	88%
VLS (%)	88% (700/798)	85%	82%	85%	84%

Table 2: Monthly triangulation from May-October 2016

	NHLS	Tier.net	Clinical Charts
Total VLD	472	292	552
Mean monthly VLD	98	59	102
Correlation Coefficient	1	0.93	0.69
Mean Bias (Bland-Altman)	Gold standard	36	-16

Correlation Analysis

Clinical Chart to NHLS Bland-Altman

Tier.net to NHLS Bland-Altman
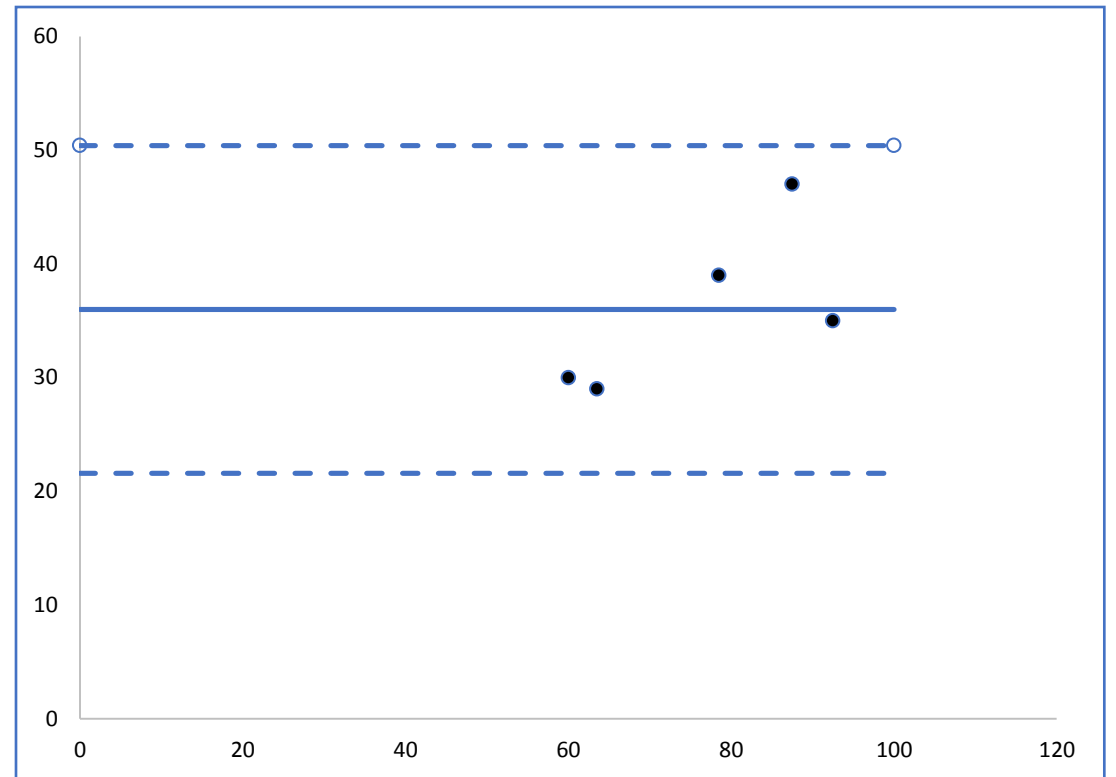
Clinical Chart Audit

Paediatric Chart Audit, VL Cascade as at 31 Oct2016

85%

88%

	TROA	VLD date only recorded	VLD result available in chart	VLS
Number of charts	951	926	798	700
Proportion	100%	97%	84%	73%
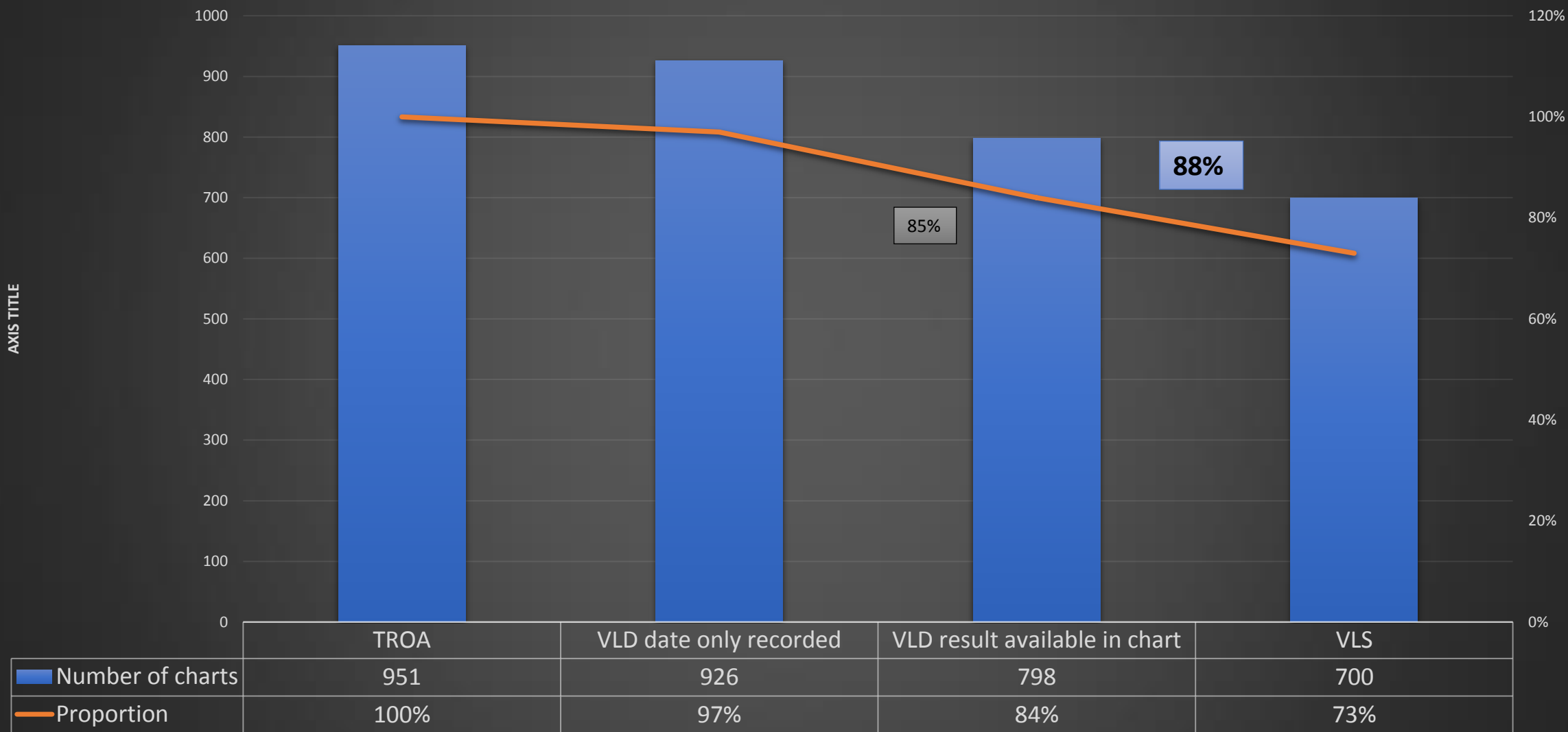
1855 charts reviewed over two month period ending Nov2016, 17% had ID recorded

Number of Paed VLD by Triangulation of routine data – Regional Hospital, eThekwini
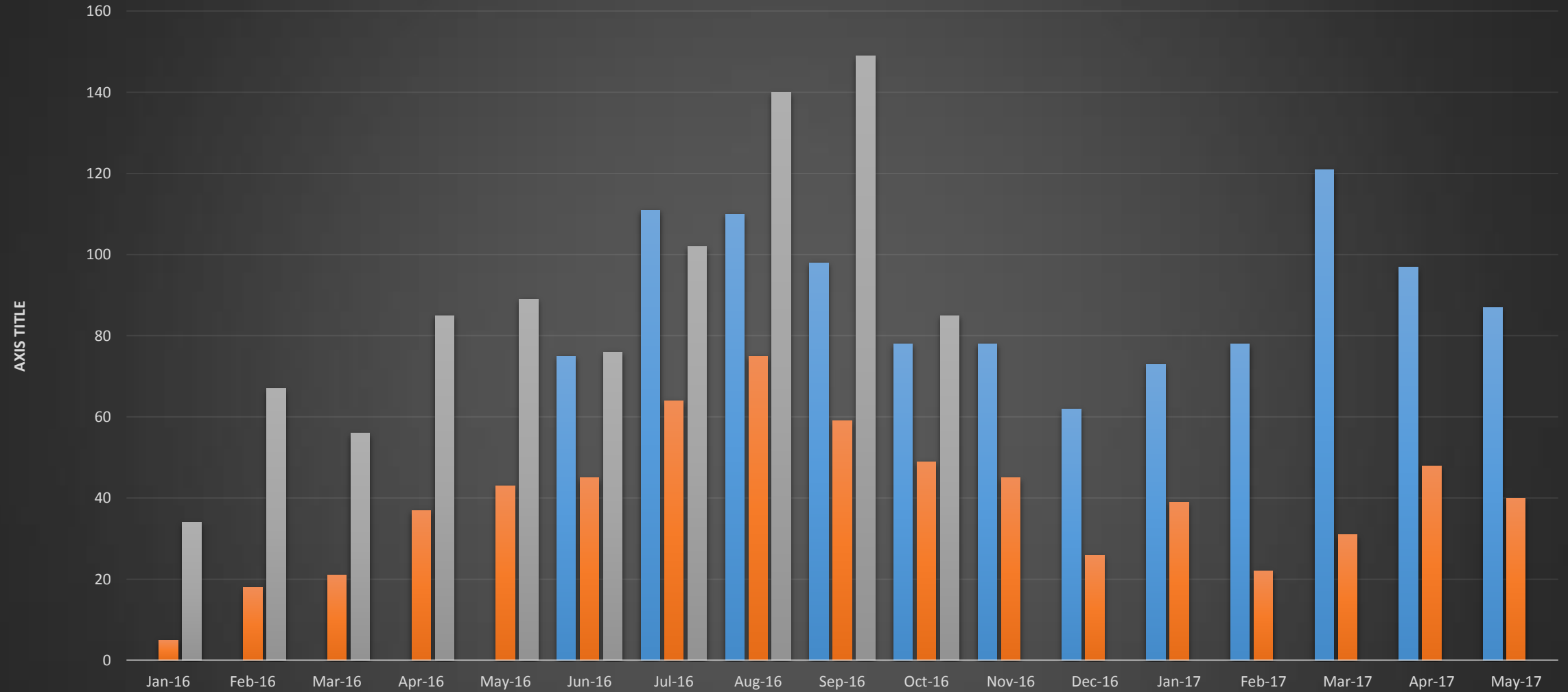
	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17
NHLS						75	111	110	98	78	78	62	73	78	121	97	87
Tier.net	5	18	21	37	43	45	64	75	59	49	45	26	39	22	31	48	40
VL Chart Audit	34	67	56	85	89	76	102	140	149	85							

Conclusions and Recommendations

- Scalability: Triangulation requires NHLS data access, Tier.net export file, staff to conduct clinical chart audits, and a computer with MS excel software and trained user; and is hence feasible at all facilities in resource-constrained settings.

- Costing Implications: One day workshop for district PHC Supervisors on provision of on-going site mentorship and support for implementation of VL facility based data triangulation.

- Lessons learnt: Simple clinician-lead analyses using Tier.net export improved VL data quality and contributed to a sustained pediatric VLD increase of >10%. The introduction of gatekeeper verification of VL requests after review of NHLS reports decreased the number of additional VL tests requested and resulted in cost savings.

Summary of Key Points

- Triangulation of routine Viral Load Monitoring data from Clinical Charts, Tier.net, and NHLS is possible at facility level using simple instruments and methodologies given current access to on-site clinical data;

- Pediatric Clients are a priority group, with smaller volumes of clients, allowing for the clinical team to acclimate to the process of routine triangulation of VL testing data;

- Clinician lead analyses and surveillance of triangulated VL testing data lead to improved reliability of Tier.net as the gold standard pediatric cohort client register, sustained improvements in pediatric VL monitoring rates and decreased duplicate VL test requests from various facility entry points